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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,255	08/24/2001	Jean- Louis Gerstenmayer	212701US	2236

22850 7590 12/31/2003

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EXAMINER

LEE, SHUN K

ART UNIT PAPER NUMBER

2878

DATE MAILED: 12/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/914,255	Applicant(s) GERSTENMAYER ET AL.	
	Examiner Shun Lee	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-34 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 18-27 and 29-34 is/are rejected.
- 7) ☒ Claim(s) 28 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>1101,0102</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

National Stage Application

1. The Examiner acknowledges consideration of the International Preliminary Examination Report in International Application PCT/FR00/00448. MPEP § 1893.03(e).

Information Disclosure Statement

2. The information disclosure statement filed 26 November 2001 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. The information disclosure statement filed 15 January 2002 also fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because each foreign patent or published foreign patent application listed in an information disclosure statement must be identified by the country or patent office which issued the patent or published the application, an appropriate document number, and the publication date indicated on the patent or published application. It has been placed in the application file, but some of the information (FR 2 739 941) referred to therein has not been considered.
3. The information disclosure statement filed 15 January 2002 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because each U.S. application listed in an information disclosure statement must be identified by the inventor, application number, and filing date.

Specification

4. The disclosure is objected to because of the following informalities:

- (a) on pg. 3, "whole-detection" in line 18 should probably be --hole-detection--;
- (b) on pg. 8, "superior to" in line 3 should probably be --greater than--;
- (c) on pg. 8, "superior to" in line 19 should probably be --greater than--;
- (d) on pg. 10, "(5)" in line 22 should probably be --(6)-- (see Fig. 2, PCT Rule 11.13(I), PCT Rule 11.13(m), and MPEP § 1825);
- (e) on pg. 14, "superior to" in line 29 should probably be --greater than--;
- (f) on pg. 15, "superior to" in line 3 should probably be --greater than--;
- (g) on pg. 15, "have lunch" in line 10 is not understood;
- (h) on pg. 15, "and" in line 13 should probably be --an--; and
- (i) on pg. 18, "□.." in line 21 should probably be --α--.

Appropriate correction is required.

5. The use of the trademark kapton (pg. 18, line 3) has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

7. Claim 28 is objected to because of the following informalities:
- (a) "the electrically isolating layer" on line 2 in claim 28 should probably be --the additional electrically isolating layer--; and
 - (b) "the supplementary layers have slits running through them" on lines 5-6 in claim 28 should probably be --said slits further extending from the second face through the supplementary layer--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:
- The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
9. Claims 33 and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 33 recites the limitation "the layers" in line 1. There is insufficient antecedent basis for this limitation in the claim. Further, it should be noted that a claim cannot depend from itself.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 18-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Charpak (US 5,959,302).

In regard to claim **18**, Charpak discloses a bidimensional detector (Figs. 1b and 3b) for incident ionizing radiation comprising primary particles whose energies are greater than or equal to 100 keV (column 13, lines 57-66), the detector including:

- (a) a block of converting material (121; column 13, lines 57-66) configured to release secondary particles by interaction with the incident ionizing radiation (column 7, line 61 to column 8, line 1; column 14, lines 1-9), whereby a thickness of the block is at least equal to one-tenth of a mean free path traveled by the incident ionizing radiation through the converting material (*i.e.*, the incident ionizing radiation has a maximum path of the order of magnitude of the distance X in Fig. 1b; column 12, lines 47-50),
- (b) parallel slits crossing the block (column 8, lines 5-13; column 7, lines 15-27; column 14, lines 1-9), the slits filled with a fluid configured to interact with the secondary particles to produce tertiary particles equal in intensity and position to the incident ionizing radiation (*i.e.*, ejected electrons from absorption of ionizing radiation which ionize a gas and release electrons; column 14, line 55 to column 8, line 4), whereby the block is positioned to ensure that the incident ionizing radiation comes in on a first block face where the slits terminate (*i.e.*, frontal inlet; column 3, lines 49-53; column 9, lines 4-9).

In regard to claim **19** which is dependent on claim 18, Charpak also discloses that the slits are perpendicular to the first face of the block (direction E1 in Fig. 1b; see also Figs. 3a and 3b; column 7, lines 52-55).

In regard to claim **20** which is dependent on claim 18, Charpak also discloses (column 13, line 57 to column 14, line 9) that slit planes form an angle of order of 1° (e.g., between 1° and 5°) with a line perpendicular to the first face of the block.

In regard to claim **21** which is dependent on claim 18, Charpak also discloses (column 7, line 48 to column 8, line 4) that the fluid is configured to be ionized by the secondary particles (*i.e.*, ejected electrons), thereby producing electrons as the tertiary particles (*i.e.*, electrons from the gas ionized by the ejected electrons), and the detector further includes means for creating an electric field (V_3 in Fig. 3b) for extracting the tertiary particles from the block (121 in Fig. 3b).

In regard to claim **22** which is dependent on claim 21, Charpak also discloses (column 7, line 48 to column 8, line 4) that the fluid is a gas.

In regard to claim **23** which is dependent on claim 21, Charpak also discloses (column 10, line 54 to column 11, line 12) means for analyzing the electrons extracted from the block.

In regard to claim **24** which is dependent on claim 23, Charpak also discloses (column 10, line 54 to column 11, line 12) that the means for analyzing includes an avalanche gas amplifier (15 in Fig. 1b) for producing electron avalanches from the electrons extracted from the block.

In regard to claim **25** which is dependent on claim 24, Charpak also discloses (column 10, line 54 to column 11, line 12) that the fluid is a gas and is configured to convert the electron avalanches into visible or ultraviolet radiation, and the means for analyzing includes means for detecting the visible or ultraviolet radiation.

In regard to claim **26** which is dependent on claim 25, Charpak also discloses (column 10, line 54 to column 11, line 12) that the means for detecting the visible or ultraviolet radiation includes a camera capable of detecting the visible or ultraviolet radiation, or a matrix of amorphous silicon photodiodes placed against the avalanche gas amplifier.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charpak (US 5,959,302) in view of Jeavons *et al.* (The high-density multiwire drift chamber. Nuclear Instruments and Methods, Vol. 124 (1975), pp. 491-503).

In regard to claim **27** which is dependent on claim 21, the detector of Charpak lacks alternating electrically conducting (*i.e.*, converting material) layers and electrically isolating layers with a first conducting layer beginning on the first block face and ending on a second block face opposite the first block face with a last conducting layer, and means for applying electric voltages to the stacked layers, with electric voltages increasing gradually from the first face to the second face, thereby creating an electric field. However, converting material blocks are well known in the art. For example, Jeavons *et al.* teach (section 2.2.2) that a converting material is an electrical conductor which alternate with electrically isolating layers beginning with a conducting layer on the first block face and ending with a conducting layer on a second block face opposite the first block face and on which the slits terminate with means for applying electric voltages to the stacked layers, with electric voltages increasing gradually from the first face to the second face, thereby creating an electric field. Jeavons *et al.* also teach (section 4.2) that the increasing electric voltages can be adjusted to obtain a focusing field. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a well known converting material block (comprising alternating conducting and isolating layers) in the detector of Charpak, in order to obtain a focusing field by adjusting the increasing electric voltages applied to the conducting layers.

In regard to claim **30** which is dependent on claim 21, Charpak also discloses (column 8, lines 21-55) that the converting material is for example glass with an electrically conductive coating. Thus the glass converting material is implicitly electrically isolating, or highly resistive. Charpak also discloses (column 8, lines 21-55) that the block includes first and second layers or grills (1210a and 1210b in Fig. 3b) which are electrically conducting and formed, respectively, on the first block face and second block face, the second block face located opposite the first block face and on which the slits terminate, and the electric field is created by raising the first layer or grill to a first voltage and the second layer or grill to a second voltage which is greater than the first voltage. Further, Jeavons *et al.* is applied as in claim 27 above.

15. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Charpak (US 5,959,302) in view of Jeavons *et al.* (The high-density multiwire drift chamber. Nuclear Instruments and Methods, Vol. 124 (1975), pp. 491-503) as applied to claim 27 above, and further in view of Amleshi *et al.* (US 5,633,501).

In regard to claim **29** which is dependent on claim 27, the modified detector of Charpak lacks that the layer of the converting material located at the second face of the block is blackened out to prevent parasitic light reflections. Amleshi *et al.* teach (column 2, lines 4-6) to provide a non-reflective electrode for an ionization sensor in order to minimize noise contributions at a photosensor. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a non-reflective electrode (e.g., a blackened out converting material layer) at the second block face in the modified detector of Charpak, in order to reduce reflection from the second block

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face so as to minimize noise contributions at the means for detecting visible or ultraviolet radiation.

16. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Charpak (US 5,959,302) in view of Hanawa (US 4,476,390).

In regard to claim **31** which is dependent on claim 18, Charpak is applied as in claim 30 above. While Charpak also discloses (column 13, line 57 to column 14, line 9) a plurality of thin inclined sheets (*i.e.*, strips) according to known prior art techniques, the detector of Charpak lacks an explicit description of spacers which separate the strips from each other. It should be noted that a spacer is an element which¹ organize or arrange with spaces between which are well known in the art. For example, Hanawa teaches spacers (18 in Fig. 2) which separate the strips from each other. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide spacers in the detector of Charpak, in order to obtain a plurality of separated thin inclined sheets.

17. Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charpak (US 5,959,302) in view of Marsden (US 4,816,683).

In regard to claim **32** which is dependent on claim 18, the detector of Charpak lacks that the block is firstly manufactured and then the slits are manufactured by one of the following techniques: waterjet cutting, electrical discharge machining, and roll-out stretch wire. However, manufacturing converting material blocks is well known in the art. For example, Marsden teaches (column 4, lines 1-21) using spark-erosion (*i.e.*,

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electrical discharge) machining in order to manufacture slits in a converting material block (column 2, lines 11-15). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to manufacture the detector of Charpak using spark-erosion, in order to obtain a plurality of slits in the converting material block.

In regard to claim **33** which is dependent on claim 33 in so far as understood, the detector of Charpak lacks that the layers are stuck to each other. However, manufacturing converting material blocks is well known in the art. For example, Marsden teaches (column 3, lines 34-36) that the layers are laminated (*i.e.*, stuck) to each other to form a plurality of layers. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to stick together layers in the detector of Charpak, in order to obtain a thick converting material block.

18. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Charpak (US 5,959,302) in view of Marsden (US 4,816,683) as applied to claim 33 above, and further in view of Inoue (US 4,427,870).

In regard to claim **34** which is dependent on claim 33 in so far as understood, the modified detector of Charpak lacks that, before creating each slit, a guide hole is made in the block which is then used to create the slit. However, manufacturing converting material blocks using electrical discharge machining is well known in the art. For example, Inoue teaches (column 1, lines 27-32) that electrical discharge machining comprises a starting (*i.e.*, guide) hole. Therefore it would have been obvious to one

¹ The American Heritage® Dictionary of the English Language, Third Edition copyright © 1992 by

having ordinary skill in the art at the time of the invention to provide a starting hole for the manufacture of the modified Charpak detector using spark-erosion, in order to obtain a plurality of slits in the converting material block.

Allowable Subject Matter

19. Claim 28 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

20. The following is a statement of reasons for the indication of allowable subject matter: the instant application is deemed to be directed to a nonobvious improvement over the invention patented in US Patent 5,959,302. The improvement comprises in combination with other recited elements, a supplementary layer formed on an additional electrically isolating layer, the additional electrically isolating layer formed on the last layer of the converting material, located at the second face of the block, whereby the supplementary layer is made of an electrically conducting material configured to absorb the secondary particles created in the last layer.

Conclusion

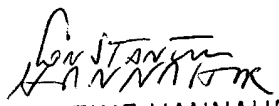
21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860. The examiner can normally be reached on Monday-Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703) 308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


CONSTANTINE HANNAHER
PRIMARY EXAMINER
GROUP ART UNIT 2878

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December 18, 2003